

LOUISIANA DEPARTMENT OF WILDLIFE & FISHERIES



**OFFICE OF FISHERIES
INLAND FISHERIES SECTION**

PART VI -B

WATERBODY MANAGEMENT PLAN SERIES

BAYOU BONNE IDEE

**WATERBODY EVALUATION &
RECOMMENDATIONS**

CHRONOLOGY

DOCUMENT SCHEDULED TO BE UPDATED ANNUALLY

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WATERBODY EVALUATION

STRATEGY STATEMENT

Recreational

Sportfish species are managed to provide a sustainable population while providing anglers the opportunity to catch or harvest numbers of fish adequate to maintain angler interest and efforts.

Commercial

The physical characteristics of Bayou Bonne Idee do not support the large rough fish species that normally comprise a commercial fishery; therefore, a commercial fishery strategy is not used.

Species of Special Concern

No threatened or endangered fish species are found in this waterbody.

EXISTING HARVEST REGULATIONS

Recreational

Statewide regulations for all fish species, the 2013 recreational fishing regulations may be viewed at the link below:

http://www.wlf.louisiana.gov/sites/default/files/pdf/publication/31743-2013-fishing-regulations/ldwf_fishing_low-res.pdf

Commercial

The 2013 commercial fishing regulations may be viewed at the link below:

http://www.wlf.louisiana.gov/sites/default/files/pdf/publication/31745-commercial-fishing-regulations/2013_commercial_fishing_low-res.pdf

Parish Regulations

Only statewide regulations apply to this waterbody.

SPECIES EVALUATION

Recreational

Largemouth bass are targeted as a species indicative of the overall fish population due to their high position in the food chain. Electrofishing is the best indicator of largemouth bass abundance and size distribution, with the exception of large bass. Gill net sampling is used to determine the status of large bass and other large fish species. Shoreline seining is used to collect information related to fish reproduction.

Largemouth Bass

Relative abundance and size structure-

In the chart below (Figure 1), fall electrofishing data is used as an indicator of largemouth bass abundance with total catch per unit effort (CPUE) (bass captured per hour of electrofishing) indicated since 1992. Restocking occurred in 1994 after repairs were made on the downstream weir. Catch per unit effort has remained stable since the restocking event occurred. Some of the sample-to-sample variation may be explained by sampling error. Figure 2 depicts the size (length) distribution of the largemouth bass population estimated from spring and fall electrofishing in 2012. Most size classes are represented, which indicates that recruitment has been stable. The entire catch per unit effort rates were 30.5 and 25.9 bass per hour for spring and fall, respectively.

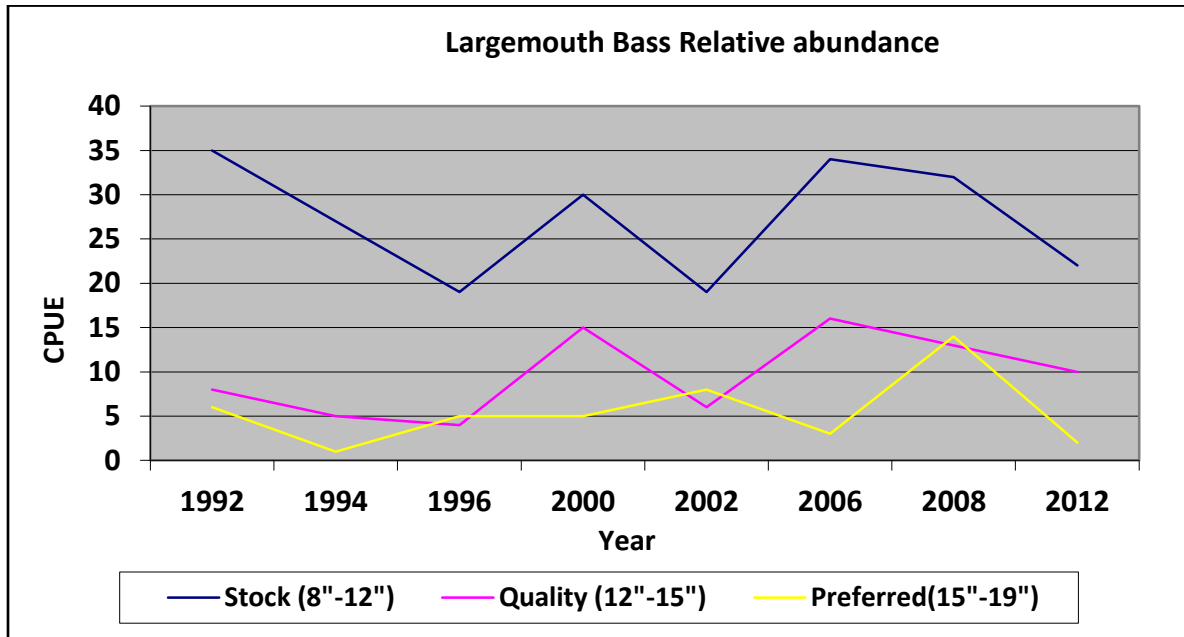


Figure 1. Catch per unit effort of stock, quality, and preferred size classes of largemouth bass from fall electrofishing samples on Bayou Bonne Idee, 1992 – 2012.

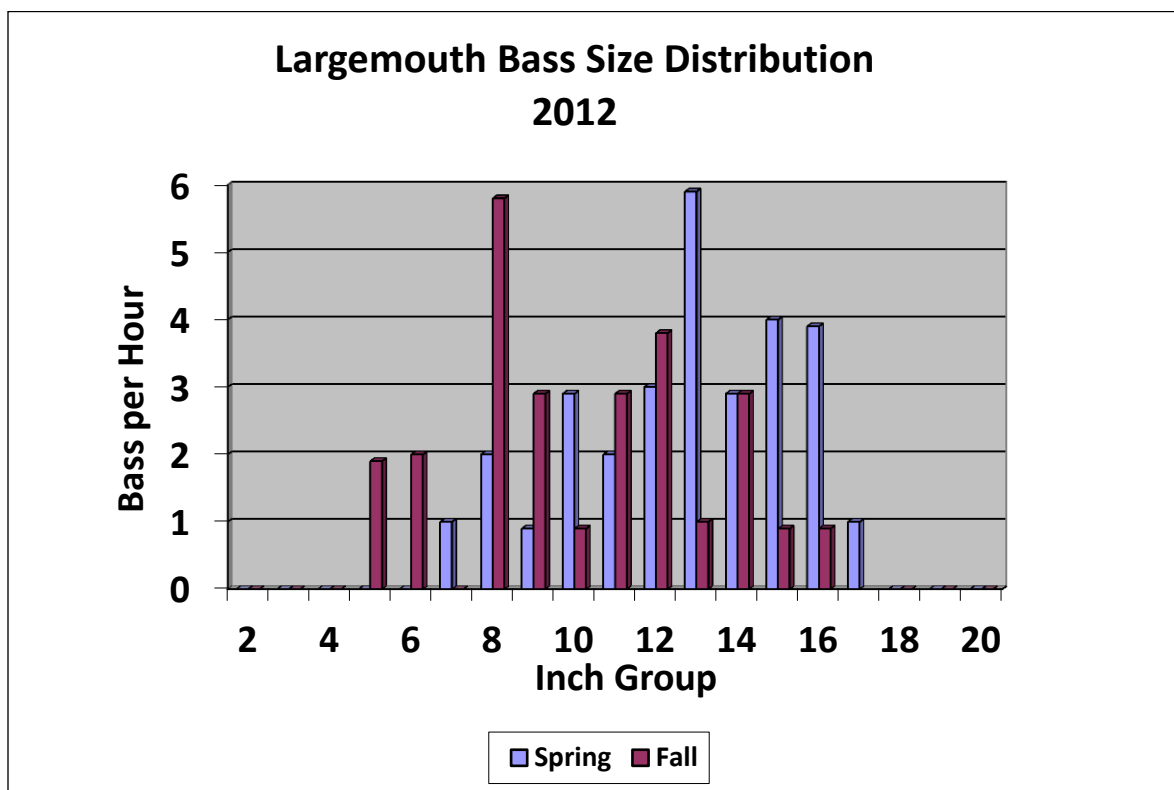


Figure 2. The size distribution (inch groups) of largemouth bass from spring and fall electrofishing results on Bayou Bonne Idee, 2012.

Forage

Sunfish *Lepomis spp.*, silversides *Labidesthes spp.*, and shad *Dorosoma spp.* have been identified as the primary bass forage species in Bayou Bonne Idee. Forage availability is measured through shoreline seine sampling and indirectly through measurement of largemouth bass body condition or relative weight. Relative weight (Wr) is the ratio of a fish's weight to the weight of a "standard" fish of the same length. The index is calculated by dividing the weight of a fish by the standard weight for its length, and multiplying the quotient by 100. Low largemouth bass relative weights below 80 indicate a potential problem with forage availability. Bayou Bonne Idee relative weights are typically 100 for all size groups, which means these fish have an adequate forage base (Figure 3). Bluegill *Lepomis macrochirus* and shad were the most abundant species collected in an electrofishing forage sample taken in fall, 2012. Catch per hour rates for these species were 432 and 144, respectively.

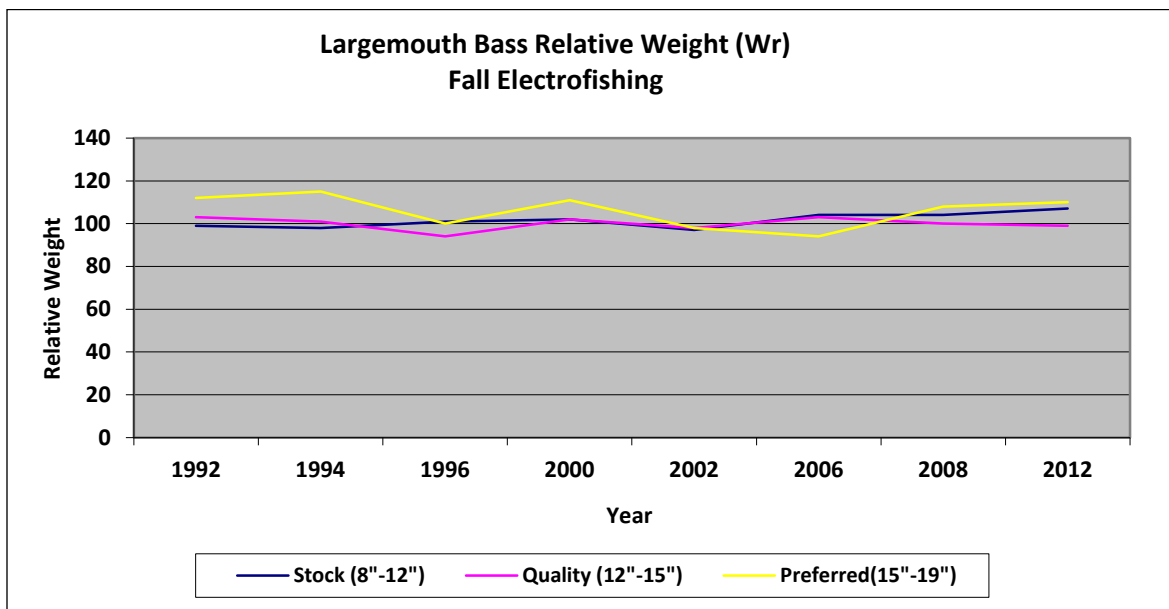


Figure 3. Relative weight of stock, quality, and preferred size classes of largemouth bass from fall electrofishing on Bayou Bonne Idee, 1992 – 2012.

Crappie and Other sunfish species

From 1965 through 1994, biomass (rotenone) sampling was used to indicate status of crappie and sunfish populations in Bayou Bonne Idee. Total weight of non-predatory game fish (sunfish) ranged from 1.2 – 76.3 pounds per acre with a yearly average of 22 lbs per acre. Crappie ranged from 0 – 72.2 pounds per acre with a yearly average of 22 lbs per acre. Beginning in 2005, crappie and sunfish sampling was conducted using standardized lead nets. Relative weights were only used from white crappie *Pomoxis annularis* because of the limited number of black crappie captured. White crappie relative weights were low in 2005 and 2008 (Figure 4). Many of the fish had relative weights between 80 and 90 percent. In 2008, all of the fish less than 8 inches total length (TL) had relative weights less than or equal to 90 percent. Also in 2008 fish greater than 8 inches TL had relative weights at or above 100. Forage is likely the limiting factor for the smaller age classes. Forage may be reduced by the low waters that occur in the summer months due to agricultural irrigation.

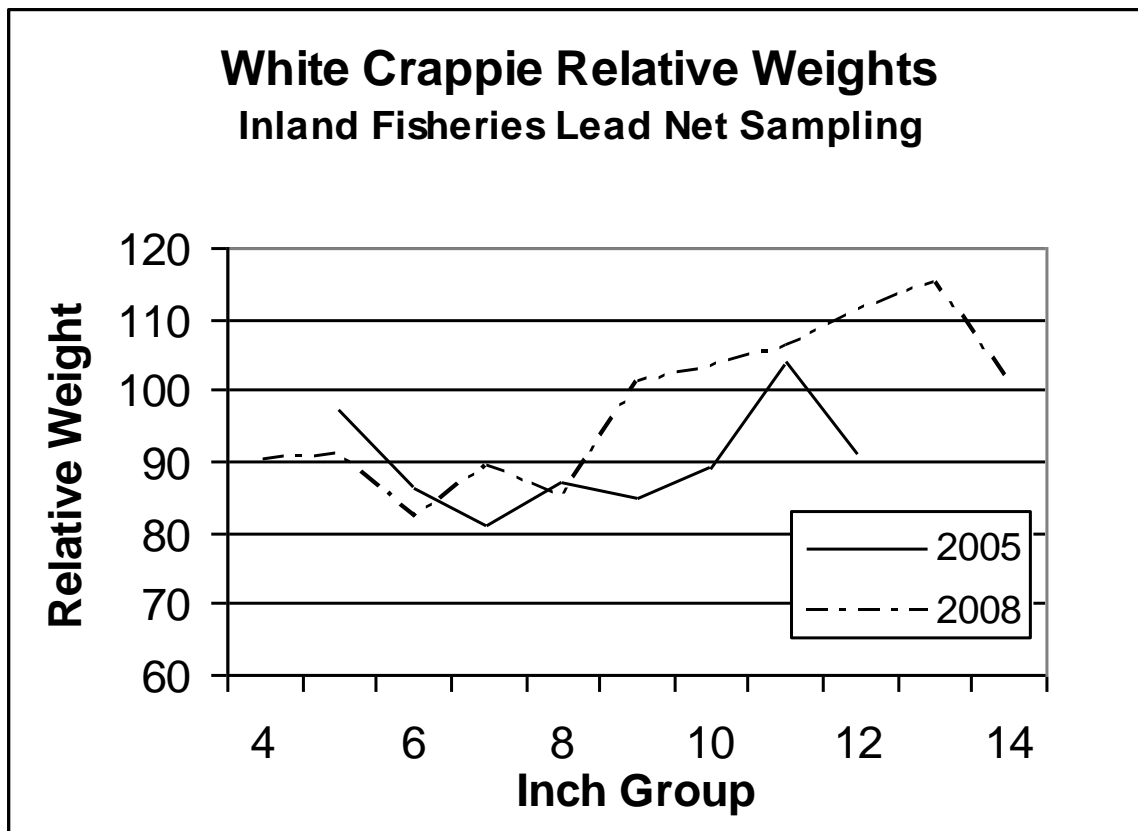


Figure 4. Relative weights of white crappie from 2005 and 2008 lead net sampling in Bayou Bonne Idee, Louisiana.

Lead net sampling in 2012 revealed an abundance of white crappie, with the size distribution skewed toward smaller size fish (Figure 5). The majority of these fish were most likely young-of-year (YOY), indicating a successful spawn in spring, 2012. The proportional stock density (PSD) value from this sample was 10, which is lower than desirable. This means that of all crappie over five inches TL, only 10% were over the quality size of eight inches TL. The desirable range is 30 – 60. In contrast, the PSD value from the 2008 sample was 56. The overall CPUE for this sample was 1.05, whereas the 2008 sample was 0.42 crappies per hour. Black crappie *P. nigromaculatus* were also present, though they represented a very small percentage of the crappie population. This is to be expected from a waterbody with frequent turbidity, such as Bonne Idee.

White Crappie Size Distribution 2012

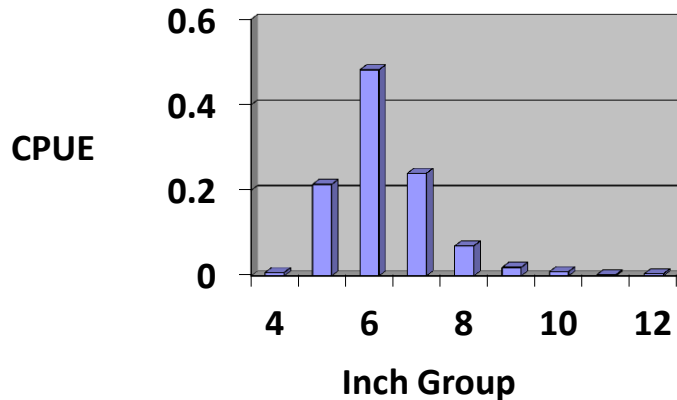


Figure 5. The size (length group) distribution of white crappie from lead net sampling results on Bayou Bonne Idee 2012. The majority of the fish were YOY recruits.

Commercial

Large rough fish species that normally comprise a commercial fishery are not found in high enough densities to support commercial harvest.

HABITAT EVALUATION

Aquatic Vegetation

Near the shoreline there are bald cypress and water tupelo. Submerged vegetation includes coontail *Ceratophyllum demersum*, fanwort *Cabomba caroliniana*, and bladderwort *Utricularia spp.* The complex cover in Bayou Bonne Idee is declining, which makes the native vegetation extremely important at providing fish habitat. Water hyacinth *Eichhornia crassipes* has been a common problem along the bayou. In 1998, the hyacinth was so severe that spray crews (seven) from throughout the state were deployed for spraying operations to reduce vegetation to a more controllable level. In recent years, the floating species, duckweed *Lemna spp.*, has become problematic at times, with large surface mats forming in various areas on Bonne Idee. Most of the problems occur in the two northernmost sections of the bayou. No aquatic type maps or biomass sampling have been conducted to date. Chemical treatment history is available from 2005 to current. The issue of overabundant aquatic vegetation, particularly invasive species is currently an issue on Bayou Bonne Idee and is likely to continue because of its shallow waters and limited flow.

Aquatic Vegetation Management

Continue routine spraying of duckweed and water hyacinth where it regularly forms large mats. Treatment will be made by spray pump surface application of **diquat dibromide** at a rate of 1 gal. per acre. Other nuisance emergent/floating vegetation should be treated as

required with use of the following herbicides: **2,4-D** (except 3/15 – 9/15) at 0.5 gal/acre for water hyacinth, American lotus, and alligator weed, **glyphosate** at 0.75 gal/acre for American lotus, water pennywort, alligator weed, and parrot's feather. **Triclopyr** (Renovate) and **isopropylamine of imazapyr** (Habitat) may be more effective on alligator weed, primrose, and parrot's feather but have irrigation restrictions. **Ammonium salt of imazamox** (Clearcast) may be used near residential areas and pump intakes.

Substrate

The silt loam substrate provides suitable spawning habitat throughout the Bonne Idee.

Artificial Structure

Bayou Bonne Idee has adequate natural complex cover but it is declining. At this time no artificial structure is necessary.

CONDITION IMBALANCE / PROBLEM

The major problem on Bayou Bonne Idee is the repeated drawdown of the lake by agricultural irrigation. The most dramatic drawdowns occur during dry summers and they can nearly dewater the northernmost lake. These frequent summer drawdowns are likely having a negative impact on fish recruitment and reproduction. Another problem is the regularly occurring infestation of duckweed, which benefits from the bayou-like properties of the lake. The duckweed originates in the narrow, upper reaches where cypress trees *Taxodium distichum* form dense thickets. Rainfall will provide temporary flow, which moves the duckweed downstream, where it will often accumulate near residential areas. The large mats have created anoxic conditions beneath them and have been a contributor to naturally caused fish kills. Silver carp *Hypophthalmichthys molitrix*, an invasive species, have recently been observed in Bonne Idee. The impact of these fish on the native fish population is unknown and they also cause a danger to boaters because of their notorious habit of leaping out of the water when disturbed by passing boats.

CORRECTIVE ACTION NEEDED

Reducing the amount of water used from the Bonne Idee to irrigate nearby agriculture land would provide for a healthier fish population. A more efficient method of duckweed control is needed to reduce the impact to the fisheries and shoreline property owners. The use of a containment boom is recommended to prevent duckweed from flowing out of the upper reaches of the lake. It will also provide an accumulation of duckweed, where it will become more efficient to treat with herbicides. See the Recommendations section below for details. It is unknown where the silver carp entered Bonne Idee. Measures should be taken to prevent further introduction and remove those that are currently in the lake.

RECOMMENDATIONS

Unfortunately, there is limited potential to reduce the amount of water used by nearby farms. Discussions have been made by the Bayou Bonne Idee Gravity Drainage Board to pump water from Bayou Bartholomew into Bonne Idee during dry periods to provide adequate water for agricultural lands and limit the scale of the summer drawdowns. One adjacent property owner (Mr. Elton Kennedy) and the Bayou Bonne Idee Drainage Board are currently working on acquiring pumps and the authority to pump water from Bayou Bartholomew.

1. Water should not be pumped into Bayou Bonne Idee because the introduction of nuisance species (Asian carp) is imminent. Bayou Bonne Idee has exhibited drawdowns for many years and the fishery has remained relatively stable. The introduction of Asian carp will likely have a much more negative impact on the fishery than the current drawdowns.
2. Continue existing recreational and commercial harvest regulations until LDWF sampling results indicate that change is appropriate and necessary from a biological perspective or such time as a change in management strategy is indicated by the collective opinion of Bayou Bonne Idee anglers.
3. Continue scheduled standardized sampling of fish populations and aquatic vegetation to determine status over time. Include evaluation of crappie and sunfish populations with the use of standardized lead nets.
4. Plan meetings on at least an annual basis with the Morehouse Parish Police Jury or their representative to discuss management, share ideas, and information.
5. Deploy a containment boom in a location in the upper section near the Azalea Bridge to prevent excessive amounts of duckweed from flowing south of this location, where it will impact fisheries and homeowners. It should be positioned in a manner to allow boat traffic and maximize the accumulation of duckweed on the upstream side. It should also have no negative impacts to private property. The area should then be treated with diquat dibromide herbicide at a rate of 1.0 gal/acre on a routine basis. The frequency of treatments will be known soon after boom deployment.
6. Monitor silver carp populations through use of gill net sampling; remove all that are captured.

APPENDIX I – AREA MAP

